

What is claimed is:

1. A filter assembly comprising:
 - a) a cartridge member including a body portion and a cylindrical neck portion depending from and in fluid communication with the body portion, the neck portion having at least two lugs depending radially outwardly therefrom, each lug having an engagement surface, at least one of said engagement surfaces defining a keyed surface formation; and
 - b) a head member defining an axial bore for receiving the neck portion of the cartridge member, the bore having at least two reception areas provided therein for receiving the lugs of the neck portion, each reception area having a mating surface defined therein for mating with the engagement surface of each lug, at least one of said mating surfaces having a keyed surface formation for mating with the keyed surface formation of said at least one engagement surface.
2. A filter assembly as recited in Claim 1, wherein each lug includes an engagement surface defining a keyed surface formation, and each reception area has a mating surface with a keyed surface formation.
3. A filter assembly as recited in Claim 2, wherein the keyed surface formation on each lug is substantially similar.
4. A filter assembly as recited in Claim 1, wherein the neck portion includes a pair of diametrically opposed lugs.

5. A filter assembly as recited in Claim 1, wherein the neck portion includes three circumferentially spaced apart lugs.

6. A filter assembly as recited in Claim 1, wherein the neck portion includes first and second pairs of diametrically opposed lugs, wherein the first pair of lugs is disposed at a first height of the neck portion and the second pair of lugs is disposed at a second height on the neck portion.

7. A filter assembly as recited in Claim 1, further comprising a support member disposed between the head member and the cartridge member, the support member having an aperture extending therethrough for receiving and retaining the neck portion of the cartridge member.

8. A filter assembly as recited in Claim 7, wherein each lug includes an inclined cam surface on a lower surface thereof, and ramped cam surfaces are formed within the aperture for cooperating with the inclined cam surfaces of the lugs upon rotation of the cartridge member relative to the support member.

9. A filter assembly as recited in Claim 8, wherein a rotary valve member is disposed within the axial bore of the head member, and the rotary valve member defines an axial bore including said at least two recesses dimensioned and configured to receive the lugs of the neck portion, said rotary valve member configured for rotation relative to said head member between an open position wherein fluid flow through the filter assembly is permitted and a closed position wherein fluid flow through the filter assembly is prevented.

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10. A filter assembly as recited in Claim 9, wherein the rotary valve member includes means for preventing the out flow of hold-up volume from the head member.

11. A filter assembly as recited in Claim 9, wherein the support member includes a seating area for receiving and retaining the head member, the seating area including a peripheral retaining wall having locking struts for engaging the head member.

12. A filter assembly as recited in Claim 1, wherein the keyed surface formation on said at least one lug is formed on an upper surface thereof.

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13. A filter assembly as recited in Claim 1, wherein the keyed surface formation on said at least one lug is formed on a radially outer surface thereof.

14. A filter assembly as recited in Claim 1, wherein at least a first portion of the keyed surface formation on said at least one lug is formed on an upper surface thereof and at least a second portion of the keyed surface formation on said at least one lug is formed on a radially outer surface thereof.

15. A filter assembly as recited in Claim 1, wherein the keyed surface formation on said at least one lug includes at least first through fourth spaced apart tooth positions each for accommodating an axially projecting tooth.

16. A filter assembly as recited in Claim 15, wherein at least the first and fourth tooth positions are filled with an axially projecting tooth.

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17. A filter assembly as recited in Claim 1, wherein the keyed surface formation on said at least one lug includes at least first through fifth spaced apart tooth positions each for accommodating an axially projecting tooth.

5 18. A filter assembly as recited in Claim 17, wherein at least the first and fifth tooth positions are filled with an axially projecting tooth.

19. A filter assembly as recited in Claim 1, wherein the keyed surface formation on said at least one lug includes at least first through sixth spaced apart tooth positions
10 each for accommodating an axially projecting tooth.

20. A filter assembly as recited in Claim 18, wherein at least the first and sixth tooth positions are filled with an axially projecting tooth.

15 21. A filter assembly as recited in Claim 1, wherein an annular insert is disposed within the axial bore of the head member, and the annular insert defines an axial bore including said at least two recesses dimensioned and configured to receive the lugs of the neck portion.

22. A filter assembly comprising:

- 5 a) a cartridge member including a body portion and a cylindrical neck portion depending from the body portion, the neck portion having a pair of diametrically opposed lugs depending radially outwardly therefrom, each lug having an engagement surface defining a keyed surface formation, the neck portion having an inlet passage for delivering fluid into the body portion and an outlet passage for delivering fluid from the body portion;
- 10 b) a head member defining an axial bore and having a fluid inlet port to accommodate the ingress of fluid into the axial bore and a fluid outlet port to accommodate the egress of fluid from the axial bore; and
- 15 c) a rotary valve member disposed within the axial bore of the head member and defining an axial bore for receiving the neck portion of the cartridge member, the axial bore of the valve member having a pair of diametrically opposed reception areas defined therein for receiving the lugs of the neck portion, each reception area having a mating surface defining a keyed surface formation adapted and configured to mate with the keyed surface formation of a corresponding lug, the valve member having an inlet orifice for communicating with the inlet port of the head member and an outlet orifice for communicating with the outlet port of the head member when the lugs of the neck portion are engaged with the reception areas of the valve member and the valve member is rotated
- 20 into an operational position.

23. A filter assembly as recited in Claim 22, wherein the rotary valve member includes a check valve for preventing the out flow of hold-up volume from the head member when the neck portion is removed from the axial bore of the valve member.

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24. A filter assembly as recited in Claim 22, further comprising a support member disposed between the valve member and the cartridge member, the support member having an aperture extending therethrough for receiving and retaining the neck portion of the cartridge member and a seating area for receiving and retaining the head member.

25. A filter assembly as recited in Claim 24, wherein each cam lug includes a inclined cam surface on a lower portion thereof for cooperating with a pair of diametrically opposed cam ramps projecting into the aperture of the support member, whereby rotation of the cartridge member relative to the support member effectuates rotational movement of the valve member relative to the head member.

26. A filter assembly as recited in Claim 24, wherein the support member includes a bracket portion for securing the filter assembly to a supporting structure.

27. A filter assembly as recited in Claim 22, wherein the keyed surface formation on each lug includes first through fourth spaced apart tooth positions each for accommodating an axially projecting tooth.

28. A filter assembly as recited in Claim 27, wherein at least the first and fourth tooth positions are filled with an axially projecting tooth.

29. A filter assembly as recited in Claim 22, wherein the keyed surface formation on each lug includes first through fifth spaced apart tooth positions each for accommodating an axially projecting tooth.

30. A filter assembly as recited in Claim 29, wherein at least the first and fifth tooth positions are filled with an axially projecting tooth.

5 31. A filter assembly as recited in Claim 22, wherein the keyed surface formation on said at least one lug includes first through sixth spaced apart tooth positions each for accommodating an axially projecting tooth.

32. A filter assembly as recited in Claim 31, wherein at least the first and sixth
10 tooth positions are filled with an axially projecting tooth.

33. A filter assembly comprising:

- a) a cartridge member including a body portion and a cylindrical neck portion depending from the body portion, the neck portion having at least one lug
15 depending radially outwardly therefrom having a keyed surface formation thereon; and
- b) a reception member defining an axial bore for receiving the neck portion of the cartridge member, the bore having at least one reception area provided therein for receiving said at least one lug, the reception area having a compatible mating surface formation defined therein for engaging the keyed surface formation on the lug so as
20 to prevent engagement with an incompatible cartridge member.

34. A filter assembly as recited in Claim 33, wherein the reception member is defined by a rotary valve disposed within an interior bore of a housing member.

35. A filter assembly as recited in Claim 33, wherein the reception member is defined by an annular insert disposed within an interior bore of a housing member.

36. A filter assembly as recited in Claim 33, further comprising a check valve
5 operatively associated with the reception member for preventing the out flow of hold-up volume therefrom when the neck portion of the cartridge is removed from the axial bore of the reception member.

37. A filter cartridge system comprising:
10 a set of filter cartridges each including a cylindrical neck portion, the neck portion of each filter cartridge in the set having at least one lug depending therefrom with a keyed surface formation thereon to enable the cartridge to mate with a compatible reception member, wherein each filter cartridge in the set has a distinct keyed surface formation thereon.

15 38. A filter cartridge system as recited in Claim 37, wherein the keyed surface formation on said at least one lug each filter cartridge in the set includes first through fourth spaced apart tooth positions each for accommodating an axially projecting tooth, such that the set includes four different keyed surface formations.

20 39. A filter cartridge system as recited in Claim 37, wherein the keyed surface formation on said at least one lug of each filter cartridge in the set includes first through fifth spaced apart tooth positions each for accommodating an axially projecting tooth, such that the set includes eight different keyed surface formations.

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40. A filter cartridge system as recited in Claim 37, wherein the keyed surface formation on said at least one lug of each filter cartridge in the set includes first through sixth spaced apart tooth positions each for accommodating an axially projecting tooth, such that the set includes fourteen different keyed surface formations.

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41. A filter cartridge system as recited in Claim 37, wherein the reception member is defined by a rotary valve disposed within an interior bore of a housing member.

42. A filter cartridge system as recited in Claim 37, wherein the reception member is defined by an annular insert disposed within an interior bore of a housing member.

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